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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 676,017	09/29/2000	Bruno Murari	851063.453	3227

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E. Russell Tarleton
Seed Intellectual Property Law Group PLLC
701 Fifth Avenue, Suite 6300
Seattle, WA 98104-7092

EXAMINER

PEREZ RAMOS, VANESSA

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 02/18/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/676,017

Applicant(s)

MURARI ET AL.

Examiner

Vanessa Perez-Ramos

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 27 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhatt (U.S. 5,822,856) in view of Bickford et al. (U.S. 5,028,983) and in further view of Miller et al. (U.S. 5,686,697).

In regard to claims 1-3, 8 and 15-20, Bhatt et al. discloses a method comprising: having a dry film with an adhesive side (col. 4, lines 1-18). Furthermore, Bhatt discloses the formation of a sacrificial layer (col. 5, line 37); the formation of holes, which read on Applicant's "forming" and "opening" "windows" (col. 6, lines 12-17), and further recognizes that these holes might need to be unfilled, which reads on Applicant's "without penetrating any underlying cavities"; depositing a dielectric layer (col. 7, line 33) and also depositing a conductive layer (col. 6, lines 17-19), which is later "selectively" removed (col. 6, lines 52-56).

Bhatt does not disclose a step of forming a mask on the dry film, and is silent about the removal of the sacrificial film. Furthermore, Bhatt does not disclose that the electrical connection elements are suspended between the two portions of the micro-mechanism and can move relative to one another.

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Bickford discloses the use of masks over dry films, and further acknowledges that these are widely used, and serve the purpose of protecting areas of the layer while exposing other areas of the same layer, as needed, when forming holes and openings during semiconductor manufacturing.

Miller discloses a method wherein electrical components are suspended and electrically interconnected, permitting components to move relative to one another (col. 3, lines 19-25). Furthermore, Miller discloses that this allows for the accomodation of three dimensional movement of individual components and contacts without functional degradation (col. 4, lines 25-37).

It is the Examiner's position that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bhatt by forming a mask on the dry film, as per Bickford, because this is a well known procedure in the art, as evidenced by Bickford's disclosure, and furthermore, because the mask will help protect the areas of the underlying layers that need to be protected, while exposing those that need to be exposed, which is extremely desirable during semiconductor manufacturing. Regarding the removal of the sacrificial layer, it is the Examiner's position that it is well known in the art that once the purpose of sacrificial layers is accomplished, such layers are removed (and hence the name "sacrificial"). Furthermore, it is the Examiner's position that it would have been obvious to one skilled in the art to modify Bhatt by utilizing moveable, suspended elements, as per Miller, because this allows for increased flexibility and freedom without degrading electrical functionality, which is extremely desirable in the art.

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In regard to claims 4 and 5, Bickford discloses that the use of resins, and ,more specifically, the use of RISTON by Dupont, is well known in the art of semiconductor manufacturing.

In regard to claims 6-7, 14, 21 and 23-24, it is the Examiner's position that the claimed methods for removing layers are well known in the art, and its selection would have been obvious to one of ordinary skill with the anticipation of an expected result (i.e., proper layer removal).

In regard to claims 9-10, the use of hark masks is well known in the art, as evidenced by Bickford's disclosure

In regard to claims 11-13 and 22, the division of wafers into individual dices is the common step done in the art, and would have been obvious to one of ordinary skill at the time of the invention.

Response to Arguments

3. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Perez-Ramos whose telephone number is 703-306-5510. The examiner can normally be reached on Mon-Thurs 7:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5665.

Vanessa Perez-Ramos
Examiner
Art Unit 1765

VPR
February 9, 2003

Benjamin Utech
BENJAMIN L UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 703